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EXAMINER	
SCHLAPKOHL, WALTER	
ART UNIT	PAPER NUMBER
1636	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,456	GOLDFARB, DAVID S.	
	Examiner	Art Unit	
	Walter Schlapkohl	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58* is/are pending in the application.

4a) Of the above claim(s) *13-15,24,25 and 29-58* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 16-23 and 26-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/15/06 & 10/24/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of the papers filed 10/2/2006. Claims 1-58 are pending. Claims 13-15, 24-25 and 29-58 are withdrawn. Claims 1-12, 16-23 and 26-28 are under examination in the instant Office action.

Election/Restrictions

Applicant's election with traverse of Group IV in the reply filed on 10/2/2006 is acknowledged. The traversal is on the ground(s) that members of Groups I-LVII comprise promoters and proteins required for replication that are functionally equivalent. Applicant further traverses the restriction requirement between Groups I-CCCXLIV on the basis that claims 1-28 are "closely related and, therefore, require common areas of search and consideration" and on the basis that no benefit is derived from imposing this restriction requirement.

Applicant's arguments have been carefully considered and have been found persuasive IN PART. Examiner has agreed to rejoin the GAL7 and GAL10 promoter in combination with the CDC6 protein, thus rejoining Groups XXIII and XLII with Applicant's elected Group IV. Applicant's other arguments directed to rejoinder of the remaining Groups are not found persuasive

because 1) cell cycle proteins are not functionally equivalent and 2) each of the inventions recited in the requirement for election/restriction mailed 7/31/2006 requires a different field of search and as such would be a search burden even if there were to be some overlap in the overall search strategy.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

Claim 2 is objected to because of the following informalities: Claim 2 recites "[t]he method according to claim 1 wherein said growing is carried out in a growth medium that allows for mother cell replication but not daughter cell replication" in lines 1-3 (emphasis added). It appears Applicant intends to refer to said culturing of control cell cultures and test cell cultures as recited in lines 13-15 of claim 1.

Similarly, claims 17 and 20 recite "said growing" wherein "said growing" appears to lack antecedent basis as explained above.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4, 7, 19, 23 & 26, and therefore dependent claims 2-3, 5-6, 8-12, 16-18, 20-22 & 27-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In a method of identifying an environmental stimulus or a gene that alters the lifespan of an organism involving mother and daughter yeast cells, claim 1 recites the step of "...determining whether the mother yeast cells in the one or more test cell cultures exhibit a change in replicable lifespan when compared to the mother yeast cells in the control cell culture, wherein an increase in the replicable lifespan of mother yeast cells of a test cell culture indicates that the genotype modifications, the environmental stimulus, or the combination thereof, enhances the replicable lifespan of the mother yeast cells in the test cell culture" in lines 16-21 (emphasis added).

Claim 1 is vague and indefinite in that the term "replicable lifespan" is unclear. Does Applicant intend a

replicative lifespan determined by the number of times a microorganism or cell can divide before dying, or does Applicant intend some other measure of lifespan such as how consistent (replicable) the replicative lifespan is between mutant and wild-type microorganisms/cells?

The terms "increase" and "enhances" in claim 1 are relative terms which render the claim indefinite. The terms "increase" and "enhances" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. How much must "replicable" lifespan increase in a test cell culture as compared to a control cell culture so that the increase is indicative of a genotype modification, an environmental stimulus, or the combination thereof which "enhances" the replicable lifespan of the cells in the test culture? Does "enhanced" (replicable) lifespan of a mother yeast cell in a test cell culture occur when the yeast cell replicates one more time than does a control mother yeast cell? Two more times? Or does "enhanced" replicable lifespan include embodiments wherein the number of replications is the same between test and control cells, but some other measure of replicable lifespan has

occurred, i.e., the length of time between cell divisions has increased?

Claim 4 recites "[t]he method according to claim 2 wherein mother and daughter cells both possess two chimeric genes encoding a protein required for replication, one under control of a promoter responsive to growth medium conditions and the other under control of a promoter operable [in] mother cells but not daughter cells" in lines 1-4 (emphasis added). Claim 4 is vague and indefinite in that the metes and bounds of a promoter responsive to growth medium conditions are unclear. Does Applicant intend any promoter responsive to any change in growth medium and/or even the presence of growth medium at all, or does Applicant intend a more narrow set of embodiments such as inducible promoters?

Claim 7 recites "[t]he method according to claim 4 wherein the promoter operably only in mother cells is an HO promoter" in lines 1-2 (emphasis added). Claim 7 is vague and indefinite in that the term HO promoter is unclear. Does Applicant intend the promoter of the HO endonuclease gene of *Saccharomyces cerevisiea* or does Applicant intend the promoter of some other gene, e.g., the heme oxygenase gene?

Claim 19 recites "[t]he method according to claim 1 wherein said determining comprises: assessing colony size of colonies

present in the control cell culture and colonies present in the one or more test cell culture, wherein colony size is equal to the replicable lifespan of the mother cell" in lines 1-5 (emphasis added). Claim 19 is vague and indefinite in that it is unclear how colony size can be equal to the replicable lifespan of a mother cell. Does Applicant intend that a colony with a two mm diameter is equal to a "replicable lifespan" of "2", or does Applicant intend, for example, that the number of cells present in a colony is equal to the number of times a cell has replicated? Claim 19 is also vague and indefinite in that the term "replicable lifespan" is unclear as explained above for claim 1.

Claim 23 recites "[t]he method according to claim 22 wherein said analyzing optical images comprises: capturing an image of colonies present in the control cell culture and an image of each of the one or more test cell cultures; and calculating the two-dimensional area or a morphometric property of colonies in each of the images, wherein the two-dimensional area or the morphometric property of a colony equates to the replicable lifespan of the mother cell" in lines 1-8 of the claim (emphasis added). Claim 23 is vague and indefinite in that the terms "morphometric property" and "replicable lifespan" are unclear. By "morphometric property" does Applicant intend

any description of a colony's shape, such as a circular or filamentous colony, or does Applicant intend measurements of a colony's size? The term "replicable lifespan" is vague and indefinite as has already been explained above for claim 1.

Claim 23 is also vague and indefinite in that the phrase "wherein the two-dimensional area or the morphometric property of a colony equates to the replicable lifespan of the mother cell" (lines 6-7) is unclear. Does Applicant intend such a method wherein the colony size can be used to determine replicable lifespan of the microorganism because a particular "morphometric property" and the "replicable lifespan" of the organism correspond to one another, or does Applicant intend such a method wherein the morphometric property and the replicable lifespan are, in fact, the same length or amount?

Claim 26 recites "[t]he method according to claim 1 wherein the yeast strain is a homozygous diploid host strain of yeast carrying two identical copies of the first and second chimeric genes but having a mutation in one copy of the non-essential gene" in lines 1-3 of the claim (emphasis added). Claim 26 is vague and indefinite in that there is improper antecedent basis for "the first and second chimeric genes" in claim 1.

Claims 1-12, 16-23 and 26-28 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for methods of identifying and environmental stimulus or a gene that alters the lifespan of yeast, does not reasonably provide enablement for methods which alter the lifespan of any organism. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Enablement is considered in view of the Wands factors (MPEP 2164.01(A)). These include: nature of the invention, breadth of the claims, guidance of the specification, the existence of working examples, state of the art, predictability of the art, the amount of experimentation necessary and the relative skill levels of those in the art. All of the Wands factors have been considered with regard to the instant claims, with the most relevant factors discussed below.

Nature of the Invention: The instant claims are drawn to a method of identifying an environmental stimulus or a gene that alters the lifespan of an organism, comprising providing either (i) mother yeast cells that possess a genotype modification, (ii) mother yeast cells that are exposed to an environmental stimulus other than a pro-oxidant, or (iii) mother yeast cells

that possess a genotype modification of a gene and are exposed to an environmental stimulus other than a pro-oxidant; culturing said cells under condition wherein the mother yeast cells can replicate and the daughter yeast cells cannot; and determining whether the mother yeast cells in a test culture exhibit a change in replicable lifespan such that an increase in replicative lifespan indicates that the genotype modification, the environmental stimulus or both enhances replicative lifespan for any organism. The nature of the invention is complex in that whatever information is gained from determination that an environmental stimulus/genotype modification has on the mother yeast must be extrapolated to determine its applicability to other organisms.

Breadth of the claims: The claims are extremely broad in that they encompass a screen involving any genotype modification (both essential and non-essential/non-lethal gene modifications), any environmental stimulus other than a pro-oxidant, or any combination of the two such that identification of such environmental stimulus/genotype modification/combination which has an effect on mother yeast cell replication is indicative of an environmental stimulus/genotype modification/combination that alters the lifespan of any

organism. The large breadth of the claims exacerbates the complexity of the invention.

Guidance of the specification/The existence of working examples: The specification discloses the use of a DEAD assay, which comprises the use of a DEAD cassette (page 7, lines 32-33 and page 8, lines 1-6). Parent yeast cells comprising two or more transgenes (preferably though not exclusively from a single DEAD cassette) can grow and replicate on a selective growth medium while daughter yeast cells cannot. The DEAD cassette's ability to cause "death of daughter cells" derives from the presence of two chimeric transgenes encoding an essential protein (i.e., a protein required for growth and replication), one under the control of an inducible promoter, the other under the control of a promoter only active in mother yeast cells (see, e.g., page 8 lines 7-25). In a preferred embodiment, the inducible promoter is a GAL1, GAL7 or GAL10 promoter and the other promoter (operable only in mother cells) is the HO endonuclease promoter (page 9, lines 4-14). The specification also teaches the use of *Saccharomyces cerevisiae* strain K6001 which carries two copies of the CDC6 gene, one under the control of the GAL1 promoter the other under the control of the HO endonuclease promoter (page 17, lines 12-30). The specification further teaches that the host strain of yeast can be a

"humanized yeast," that is a yeast gene that regulates replicative lifespan can be replaced with a human homolog of the yeast gene (page 19, lines 10-14).

As examples, the specification teaches that K6001 SIR2 and sir2Δ yeast cells have equal growth rates in galactose-containing media but that sir2Δ yeast cells stop dividing at significantly lower OD_{600} than SIR2 cells. However, SIR2 was already known to play a role in yeast lifespan. The specification also teaches the use of the DEAD assay to assess the effect of deleting SGS1, a gene also known to be required for yeast replication, on replicative lifespan (see Example 2, pages 26-28). Examples 3 and 4 (pages 29, lines 20-31; and page 30, lines 1-19) teach that the Sir2 activator resveratrol extends replicative lifespan and that the pro-oxidant paraquat reduces replicative lifespan, respectively, of K6001 cells in a DEAD assay.

The specification fails to teach how such assays can identify environmental stimuli, genes and/or a combination of an environmental stimulus and a gene that alters the lifespan of any organism.

The specification fails to provide adequate guidance for how the determination that, e.g., a mutated gene which leads to

enhanced lifespan in yeast would necessarily alter the lifespan of a mouse, a pig or a human.

State of the prior art: The prior art discloses methods for identifying an environmental stimulus or gene that alters the lifespan of yeast (see, e.g., Guarente et al, US Patent No. 6228583; cited below). However, but the prior art is unreliable and underdeveloped with regard to genetic screens in yeast which are, of themselves, applicable to other organisms. For example, while Guarente et al teach a method for the identification of genes/compounds which affect yeast lifespan, Guarente et al also teach that a more complete understanding of the role of various genes in aging is obtained by studying such genes in mammals directly (see entire document, especially column 14, lines 33-40). Furthermore, Guarente et al teach that screening for useful compounds that affect aging requires administering the compound to be tested over a range of doses to the organism and assaying at various time points for the effect on lifespan (column 15, lines 46-49). It also seems clear from the prior art that any gene identified in yeast as able to alter lifespan in yeast would at a minimum have to have a homolog in the organism in which the gene or environmental stimulus were purported to also alter lifespan.

Predictability of the art/Amount of experimentation necessary: The unpredictability of correlating genetic studies or drug screens in one organism with the ability of a gene or drug to alter the lifespan in a different organism is taught in the prior art by Jazwinski (*Journal of Gerontology* **45**(3)B68-74, 1990). Jazwinski teaches yeast as a model for the molecular analysis of aging. Jazwinski also teaches that yeast aging is similar to the aging of human diploid fibroblasts in culture (see entire document, especially page B68, first and second columns). However, Jazwinski notes that "[i]t would be difficult to claim that the problem of aging in multicellular organisms can be solved by the molecular analysis of this process in yeast" (page B73, first column, 2nd full paragraph). Furthermore, in post-filing art Nadège Minois teaches that aging is a personal and complex phenomenon and that no single variable (i.e. gene or environmental stimulus) can adequately capture the full extent of its complexity (*Ageing Research Reviews* **5**:52-59, 2006). Minois also teaches that while yeast, rodents and *C. elegans* can be good models in which to study the aging process, "the methods used to assess the impact of the genetic changes on the organism in question do not always provide as complete a picture as possible of ageing's multi-facetted nature" (see page 52, Abstract). Minois teaches that aging is dynamic and to

ignore this fact could be costly (page 55, 2nd paragraph). Finally, Minois teaches that measuring several variables during the whole lifespan of the organism is the only way of getting a reliable picture of aging (page 56, 2nd full paragraph).

Given the complex nature of invention and the underdeveloped state of the art at the time of filing, there would be a large and prohibitive amount of experimentation required to make and use the claimed invention. At a minimum, one of ordinary skill in the art would have to establish that the gene/stimulus identified in Applicant's claimed method utilizing mother yeast cell cultures was also present/applicable in the organism to which the study were being correlated and that the gene/stimulus had the same function/effect in the other organism. One would then have to establish that even if such a gene had the same function in a different organism, other peripheral factors involved in the individual, complex and dynamic process of aging were not at play such that the determination that the gene enhanced replicative lifespan in yeast also had an effect on lifespan of the other organism.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 11-12, 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Guarente et al (US Patent No. 6,228,583; IDS Ref. 1).

Guarente et al teach a method of identifying compounds that alter the lifespan of a cell (see entire document, especially the Abstract and paragraph bridging columns 1-2). Specifically, Guarente et al teach a method providing control and test cultures wherein one or more test cell cultures, but not the control cell culture, is exposed to an environmental stimulus (e.g., a compound in the media); culturing the control cell cultures and one or more test cell cultures under conditions whereby mother yeast cells can replicate and daughter yeast cells cannot; and determining whether the mother yeast cells in the one or more test cell cultures exhibits a change in replicable lifespan when compared to the mother yeast cells in the control cell culture (see column 6, lines 4-53). Regarding

claims 11-12, the mother cells can possess a genotype modification involving a nonessential gene (see column 6, lines 56-59 regarding the use of any marker gene as well as the use of temperature sensitive mutants in column 8, lines 6-40). Regarding claim 16, Guarente et al teach such a method wherein said method comprises performing growth curve analyses (see, e.g., Figure 1). Regarding claim 19, because growth would correspond to the replicative lifespan of the mother in cases where the replication of daughter cells is inhibited, Guarente et al teach such a method wherein the determining comprises assessing colony size and the colony size would be "equal" to the replicative lifespan of the mother cell (see column 6, lines 30-32).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 11-12 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guarente et al (US Patent No. 6,228,583; IDS Ref. 1) in view of Bradley et al (US Patent 6,531,289).

Guarente et al teach a method of identifying compounds that alter the lifespan of cell (see entire document, especially the Abstract and paragraph bridging columns 1-2). Specifically, Guarente et al teach a method providing control and test cultures wherein one or more test cell cultures but not the control cell culture is exposed to an environmental stimulus (e.g., a compound in the media); culturing the control cell cultures and one or more test cell cultures under conditions whereby mother yeast cells can replicate and daughter yeast cells cannot; and determining whether the mother yeast cells in the one or more test cell cultures exhibits a change in replicable lifespan when compared to the mother yeast cells in the control cell culture (see column 6, lines 4-53). Guarente et al further teach that the mother cells can possess a genotype modification involving a nonessential gene (see column 6, lines 56-59 regarding the use of any marker gene as well as the use of temperature sensitive mutants in column 8, lines 6-40). Furthermore, Guarente et al teach such a method wherein said method comprises performing growth curve analyses (see, e.g.,

Figure 1). Finally, Guarente et al teach such a method wherein the determining comprises assessing colony size (see column 6, lines 30-32).

Guarente et al do not explicitly teach this procedure wherein the yeast are grown either in liquid or solid growth medium, nor wherein the growth curve analyses are performed by measuring optical density of the liquid growth media.

Bradley et al teach methods of screening for yeast cell growth wherein the yeast are grown in liquid media and the growth is measured by following the optical density of the cells in the liquid media (see entire document, especially column 6, lines 40-49). Bradley et al also teach growth of yeast on solid plates for measuring colony formation from single cells (ibid).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to grow the yeast in a method identifying compounds that alter the lifespan of cell as taught by Guarente et al in liquid or solid media as taught by Bradley et al and further to measure yeast growth using optical density as taught by Bradley et al simply as a matter of designer's choice.

One would have been motivated to combine the method taught be Guarente et al for identifying compounds that alter the lifespan of a cell (which requires the exposure of yeast to

different agents and monitoring the growth of such yeast both in control cultures and test cultures) with the method taught by Bradley et al for growing yeast in a screening method (comprising the use of solid media or liquid media and measuring by optical density) to facilitate the quantitative determination of cell growth of multiple cultures/colonies.

Based upon the teachings of the cited references, the high skill of one of ordinary skill in the art, and absent evidence to the contrary, there would have been a reasonable expectation of success to result when combining the methods of Guarente et al and those of Bradley et al.

Conclusion

No claim is allowed.

Certain papers related to this application may be submitted to the Art Unit 1636 by facsimile transmission. The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)). The official fax telephone number for the Group is (571) 273-8300. Note: If Applicant *does* submit a paper by fax, the original signed copy should be retained by Applicant or Applicant's representative.

NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers in the Office.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent applications to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at (800) 786-9199.

Any inquiry concerning rejections or objections in this communication or earlier communications from the examiner should be directed to Walter Schlapkohl whose telephone number is (571) 272-4439. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Remy Yucel can be reached at (571) 272-0781.

Walter A. Schlapkohl, Ph.D.
Patent Examiner
Art Unit 1636

December 7, 2006

NANCY VOGEL
PRIMARY EXAMINER